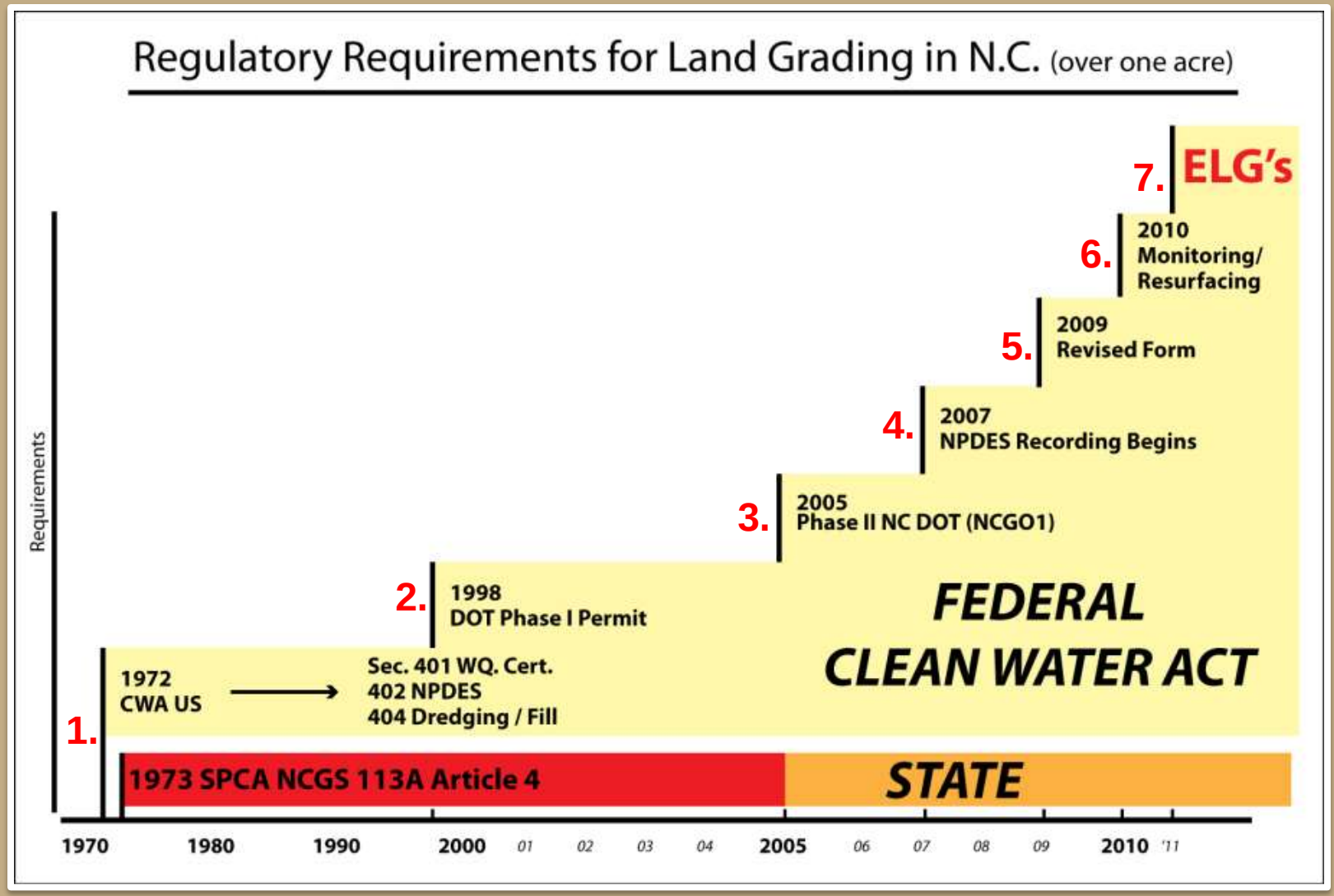
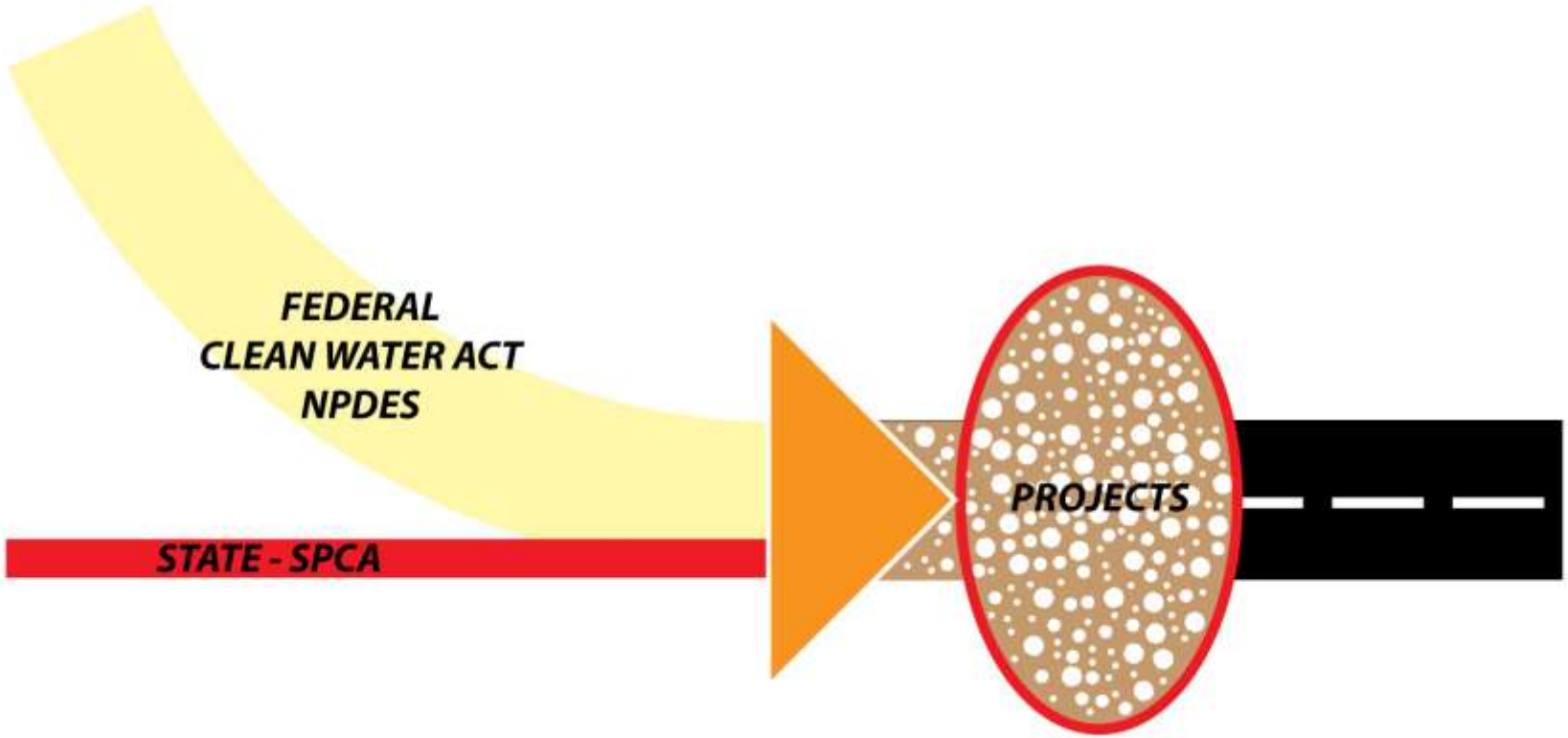
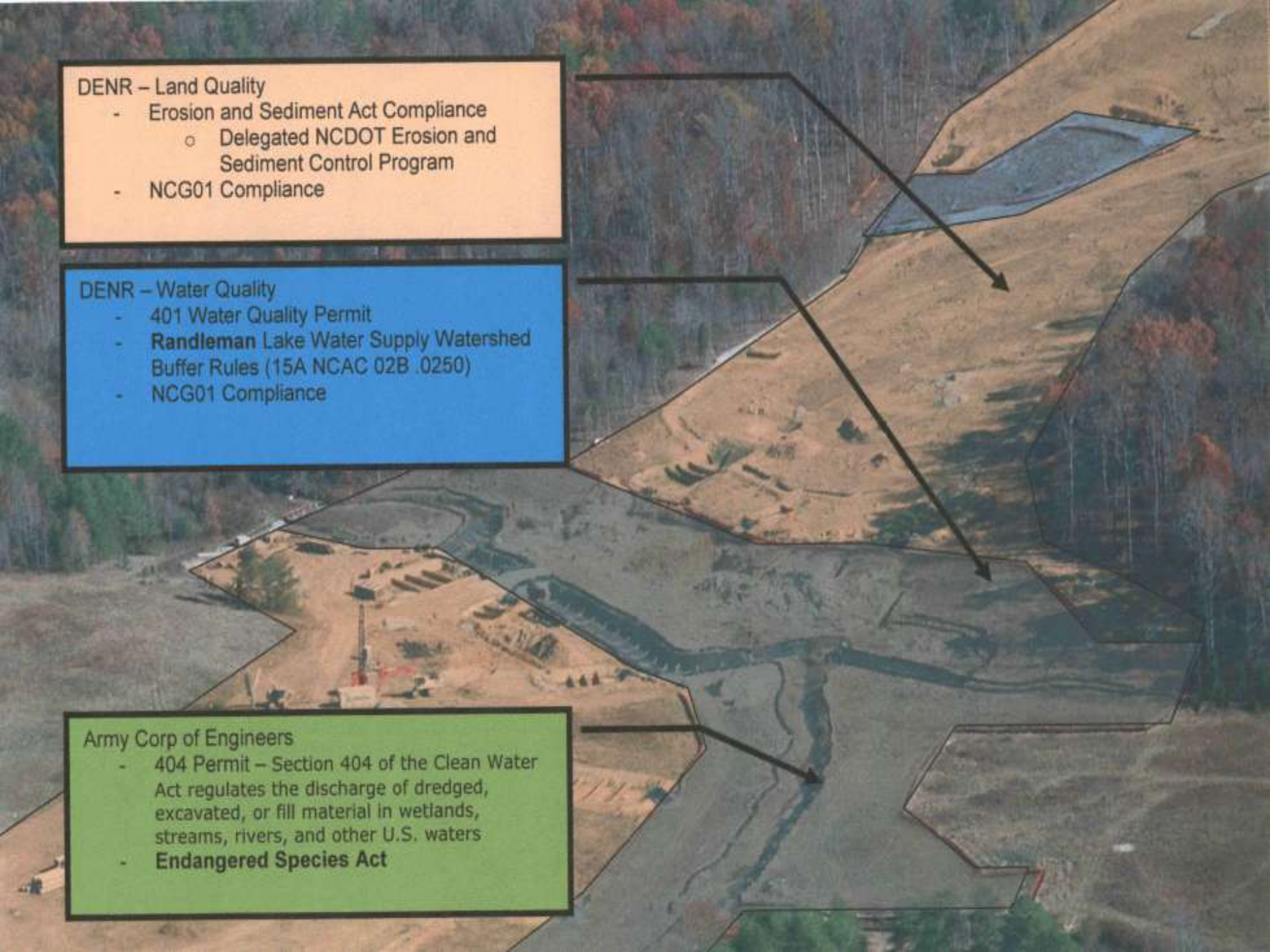
2011 CONSTRUCTION CONFERENCE

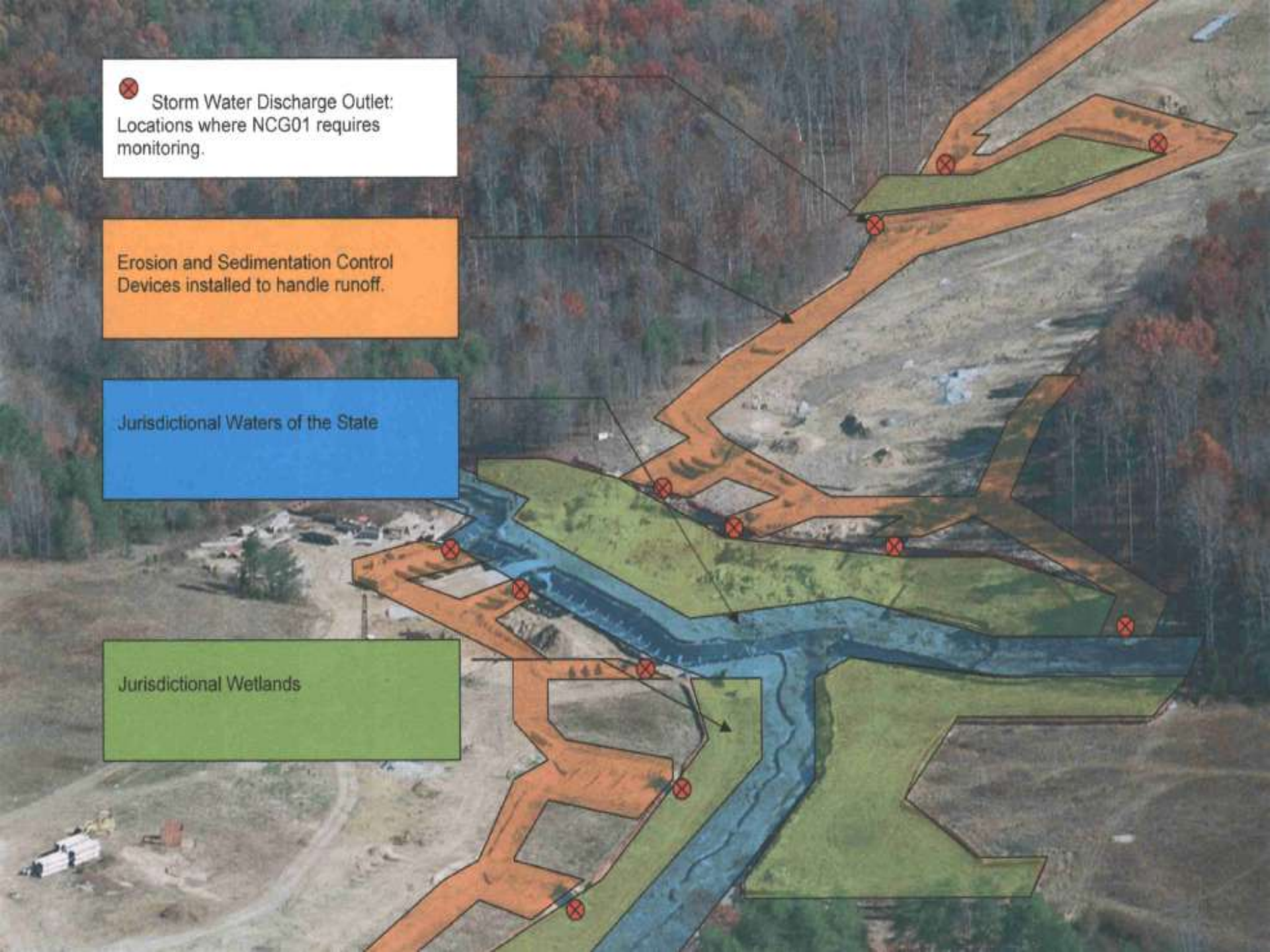
EROSION CONTROL UPDATE


Regulatory Requirements for Land Grading in N.C. (over one acre)
Requirements
1. 1972 CWA US
Sec. 401 WQ. Cert.
402 NPDES
404 Dredging / Fill
2. 1998 DOT Phase I Permit
3. 2005 Phase II NC DOT (NCGO1)
4. 2007 NPDES Recording Begins
5. 2009 Revised Form
6. 2010 Monitoring/ Resurfacing
7. ELG's
FEDERAL CLEAN WATER ACT
1973 SPCA NCGS 113A Article 4
STATE
1970 1980 1990 2000 01 02 03 04 2005 06 07 08 09 2010 '11

Where Compliance Hits the Road




DENR – Land Quality
- Erosion and Sediment Act Compliance
  - Delegated NCDOT Erosion and Sediment Control Program
- NCG01 Compliance
DENR – Water Quality
- 401 Water Quality Permit
- **Randleman** Lake Water Supply Watershed Buffer Rules (15A NCAC 02B .0250)
- NCG01 Compliance
Army Corp of Engineers
- 404 Permit – Section 404 of the Clean Water Act regulates the discharge of dredged, excavated, or fill material in wetlands, streams, rivers, and other U.S. waters
- **Endangered Species Act**


Storm Water Discharge Outlet: Locations where NCG01 requires monitoring.
Erosion and Sedimentation Control Devices installed to handle runoff.
Jurisdictional Waters of the State
Jurisdictional Wetlands

NPDES Form 2007

FOR CONSTRUCTION ACTIVITIES
SPPPFORM30

North Carolina Department of Transportation
Stormwater Inspection Form
Permit NCG010000

Project No:_____ Division:_____
County:_____ Project Type:_____
Location:_____ Water Classification:_____

Indicate in Water Classification if it is:
C-Standard **Trout**-Trout Waters
HQW-High Quality Water
303d-Stream that has been identified as being impaired due to sediment or turbidity

Date:_____
Rainfall: No ☐ Yes ☐ amt.____in
Evaluator:_____

Inspect all erosion and sediment control measures on projects that are one acre or greater at least once every 7 calendar days (at least twice every 7 calendar days for facilities discharging to 303(d) listed waters impaired for turbidity or sediment) and within 24 hours after any storm event of greater than 0.5 inch of rain per 24 hour period.

Visible Sediment leaving the project right of way and into jurisdictional areas: Y/N___
Are there any signs of fuels, lubricants, coolants, or other contaminants discharged on the ground or surface waters? Y/N___

If the answer is YES, indicate locations and corrective actions taken below.

Comments and Corrective Actions:

Date:_____
Rainfall: No ☐ Yes ☐ amt.____in
Evaluator:_____

Inspect all erosion and sediment control measures on projects that are one acre or greater at least once every 7 calendar days (at least twice every 7 calendar days for facilities discharging to 303(d) listed waters impaired for turbidity or sediment) and within 24 hours after any storm event of greater than 0.5 inch of rain per 24 hour period.

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Date:_____
Rainfall: No ☐ Yes ☐ amt.____in
Evaluator:_____

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Visible Sediment leaving the project right of way and into jurisdictional areas: Y/N___
Are there any signs of fuels, lubricants, coolants, or other contaminants discharged on the ground or surface waters? Y/N___

If the answer is YES, indicate locations and corrective actions taken below.

Comments and Corrective Actions:

Is the entire project vegetated and permanently stabilized? Yes ☐ No ☐
Final Inspection Date:_____ Evaluator:_____

NPDES Form 2009

08/2009 SPPPFORM30

STORMWATER INSPECTIONS FOR GENERAL PERMIT NCG010000 – LAND DISTURBING ACTIVITIES
SELF-INSPECTION REPORT FOR LAND DISTURBING ACTIVITY AS REQUIRED BY § 113A-54.1

NCDOT Highway Stormwater Program

PROJECT LOCATION _____ **TIP#** _____ **COUNTY** _____
LEVEL II SUPERVISOR _____ **CONTRACTOR** _____

All erosion and sedimentation control facilities and stormwater discharge outfalls must be inspected at least once (twice, if on 303(d) listed stream impaired by construction related parameters see *http://h2o.enr.state.nc.us/su/construction303d*) per seven calendar days and within 24 hours of a rainfall of 0.5 inches per 24 hours. Permittee must keep a record of inspections. Attach Multi Precipitation Estimator (MPE) rainfall data for weekly period. If using on site rain gage, complete daily rainfall measurement.

Day	Date	Rain Amt (in)
M		
T		
W		
Th		
F		
S		
Su		

Phase of Grading (Place an "x" in the box of the current project phase)	
Installation of perimeter erosion and sediment control measures	
Clearing and grubbing of existing ground cover	
Completion of any phase of grading of slopes or fills	
Installation of storm drainage facilities	
Completion of construction or development	
Establishment of permanent ground cover sufficient to restrain erosion.	

By this signature, I certify (in accordance with Part II Section B, 10 of the NCG010000 permit) that this report is accurate and complete to the best of my knowledge:

Cert. Level II Supervisor **Cert. #**

NCDOT Cert. Level II Representative **Cert. #**

EROSION AND SEDIMENTATION CONTROL MEASURES INSPECTED: **Rate Discharge Quality if measure is also a Storm Discharge Outfall (SDO) Corrective action is needed if ratings for Discharge Quality are 4 or above.**

Insp. Date	Station Number	Needed Corrective Actions	Priority *	Date Corrected	Sediment Damage Y/N +	Discharge Quality: SDO Y/N	Clarity **	Floating Solids ***	Suspended Solids ***	Oil Sheen Y/N	Other Pollutants

* R=Routine, needs attention within 5 days; U=Urgent, needs attention within 24 hrs.

** 1=Clear, 2=Slightly Cloudy, 3=Cloudy, 4=Very Cloudy 5=Extremely Cloudy

*** 1=None, 2=Slight, 3=Mild, 4=Moderate, 5=Extreme

\+ List actions taken to restore sedimentation damage Contact DWQ/DLR within 24 hrs. if damage occurs.

NPDES Form 2010

07/2010 SPPPFORM30

INSPECTION RECORD FOR ACTIVITIES UNDER STORMWATER GENERAL PERMIT NCG010000
SELF-INSPECTION RECORD FOR LAND DISTURBING ACTIVITIES PER § 113A-54.1
RESPONSE FOR EROSION CONTROL FORM 1675

PROJECT LOCATION _____ **TIP #** _____
LEVEL II SUPERVISOR _____ **COUNTY** _____
CONTRACTOR _____

All erosion and sedimentation control measures and stormwater discharge outfalls must be inspected at least once (twice, if on 303(d) listed stream impaired by turbidity, see *http://portal.ncdenr.org/c/document_library/get_file?uuid=d8cf0cc2-6d8d-47e8-96e6-f769fca0cca4&groupId=38364* **) per seven calendar days and within 24 hours of a rainfall of 0.5 inch per 24 hour period. Permittee must keep a record of inspections. Attach Multi Precipitation Estimator (MPE) rainfall data for weekly period. If using on site rain gage, complete daily rainfall measurement.**

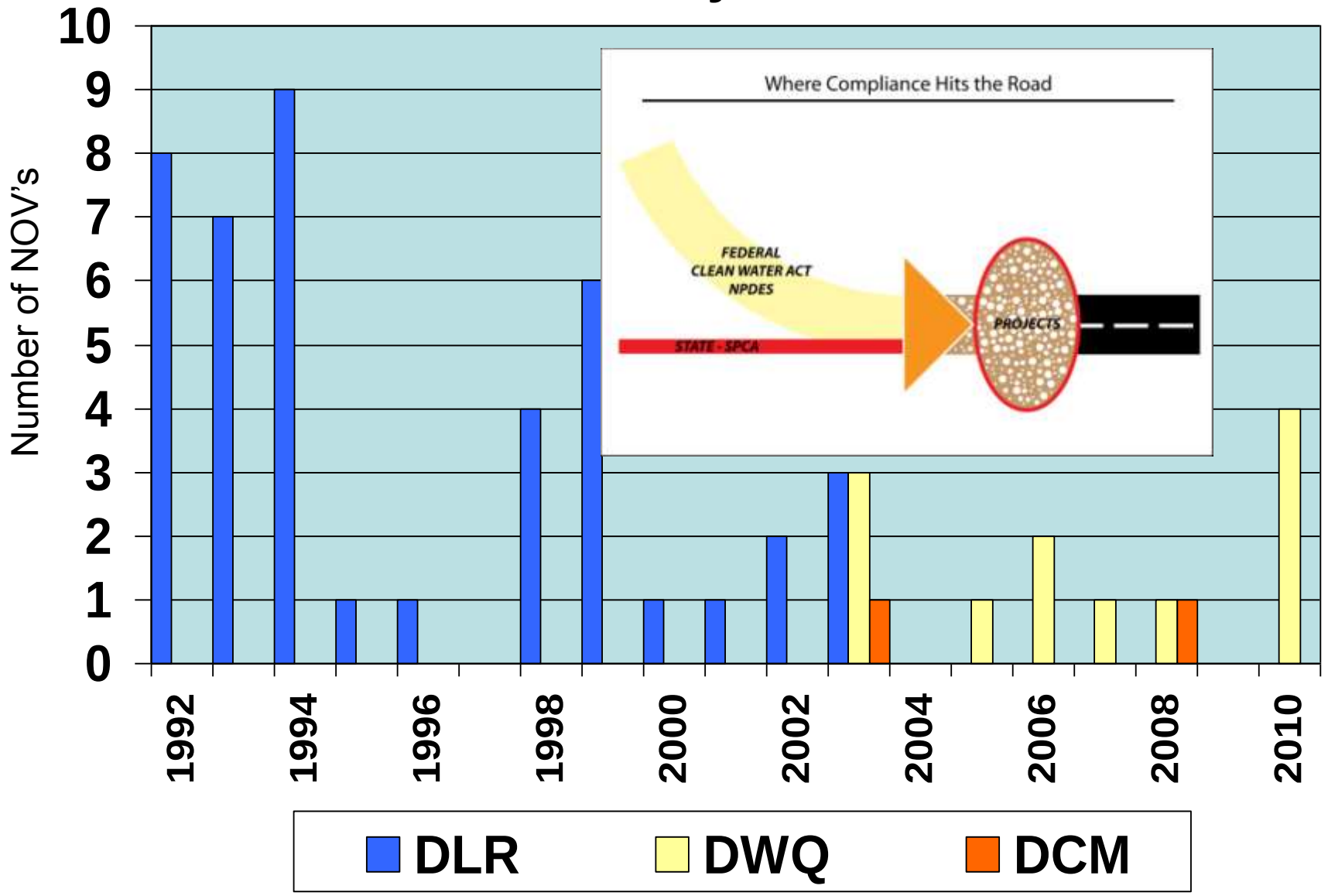
Day	Date	Rain Amt (in)	Notes
M			
T			
W			
Th			
F			
Sat			
Sun			

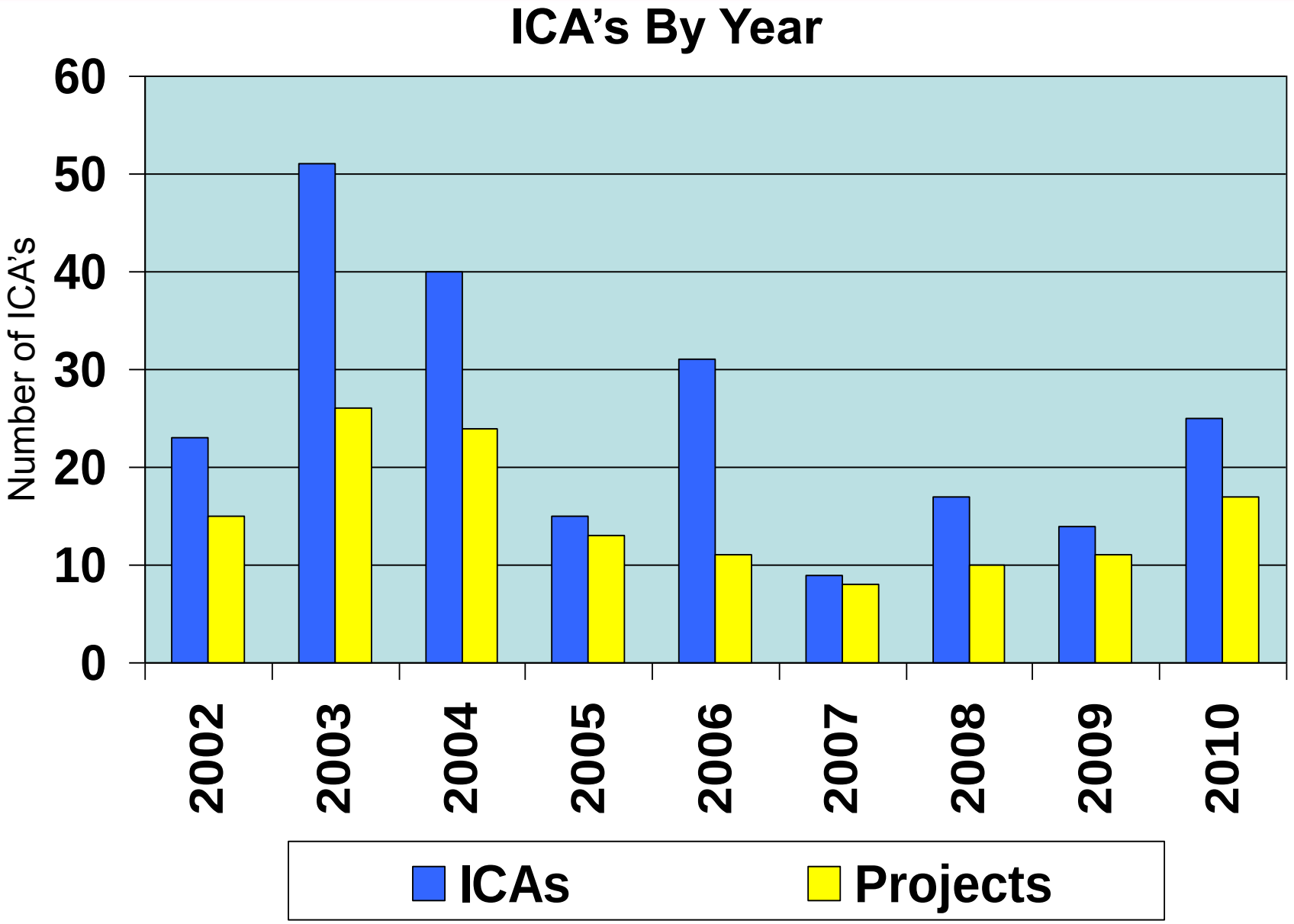
Phase of Grading (Place a check in the box of the current project phase)	
Installation of perimeter erosion and sediment control measures	
Clearing and grubbing of existing ground cover	
Completion of any phase of grading of slopes or fills	
Installation of storm drainage facilities	
Completion of construction or development	
Establishment of permanent ground cover sufficient to restrain erosion	

Has all land disturbing activity been completed? (Y/N) _____
Has the final permanent ground cover been completed and established? (Y/N) _____

By this signature, I certify (in accordance with Part II Section B, 10 of the NCG010000 permit) that this report is accurate and complete to the best of my knowledge:	
Cert. Level II Supervisor	Cert. #
NCDOT Cert. Level II Representative	Cert. #

NOV's By Year


Number of NOV's
10
9
8
7
6
5
4
3
2
1
0
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
DLR
DWQ
DCM
Where Compliance Hits the Road
FEDERAL
CLEAN WATER ACT
NPDES
STATE - SPCA
PROJECTS


ICA's By Year
Number of ICA's
60
50
40
30
20
10
0
2002
2003
2004
2005
2006
2007
2008
2009
2010
ICAs
Projects

New Technology

Wattles and Polyacrylamide

- July 2008 introduced wattles/PAM on NCDOT bid-build projects
- Studies prove that Fiber Check Dams and PAM are superior to rock measures to reduce turbidity

Excelsior vs. Coir Fiber Wattle

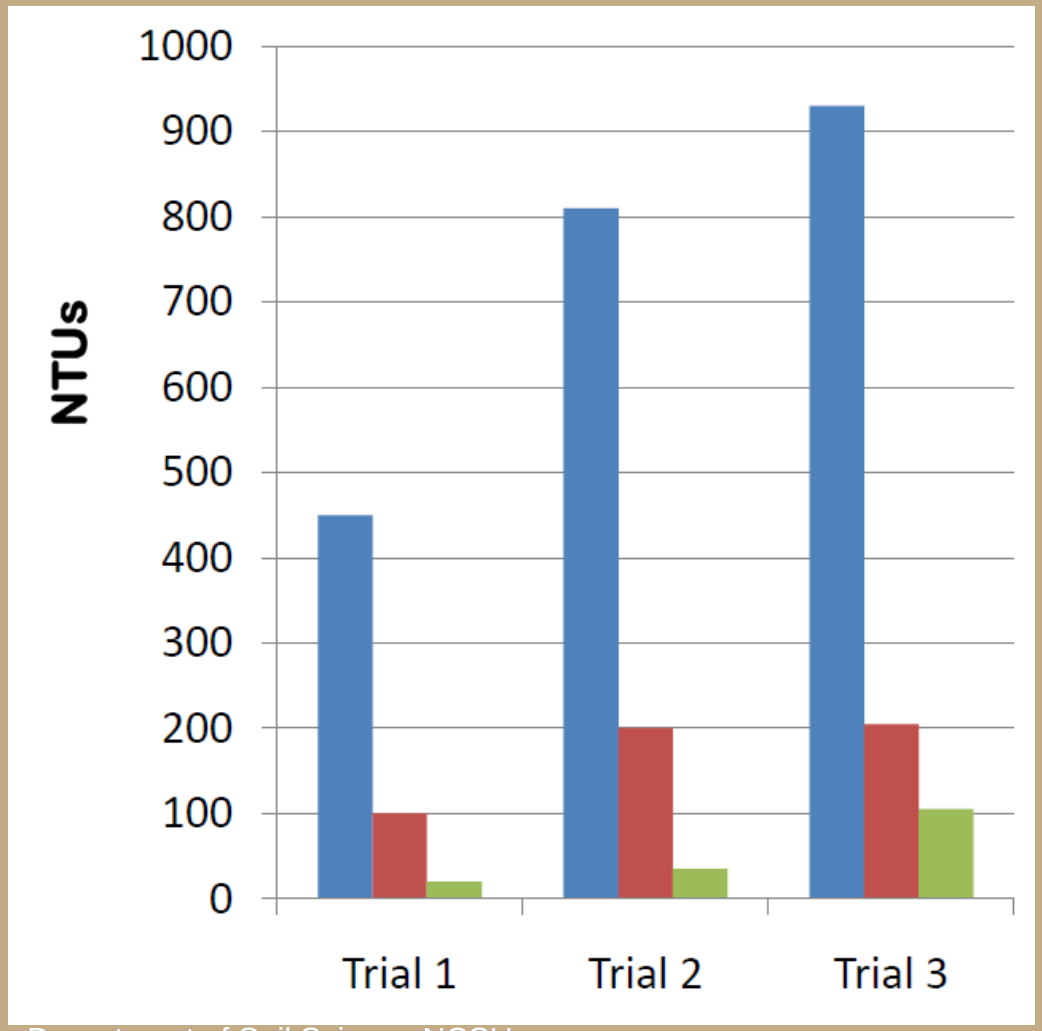
Excelsior Wattle

- Design Life: 12 – 24 months
- Average Cost: $70 per wattle
- Placement: Projects with one year duration or less

Coir Fiber Wattle

- Design Life: less than two years
- Average Cost: $80 per wattle
- Placement: Projects with greater than one year duration

Turbidity Reduction
Traditional BMP's vs. New BMP's



Department of Soil Science NCSU

Wattle Bid Averages

- Excelsior Wattle with PAM & matting - $100
- Coir Fiber Wattle with PAM & matting - $110
- Silt Check Type A - $270
- Silt Check B - $75

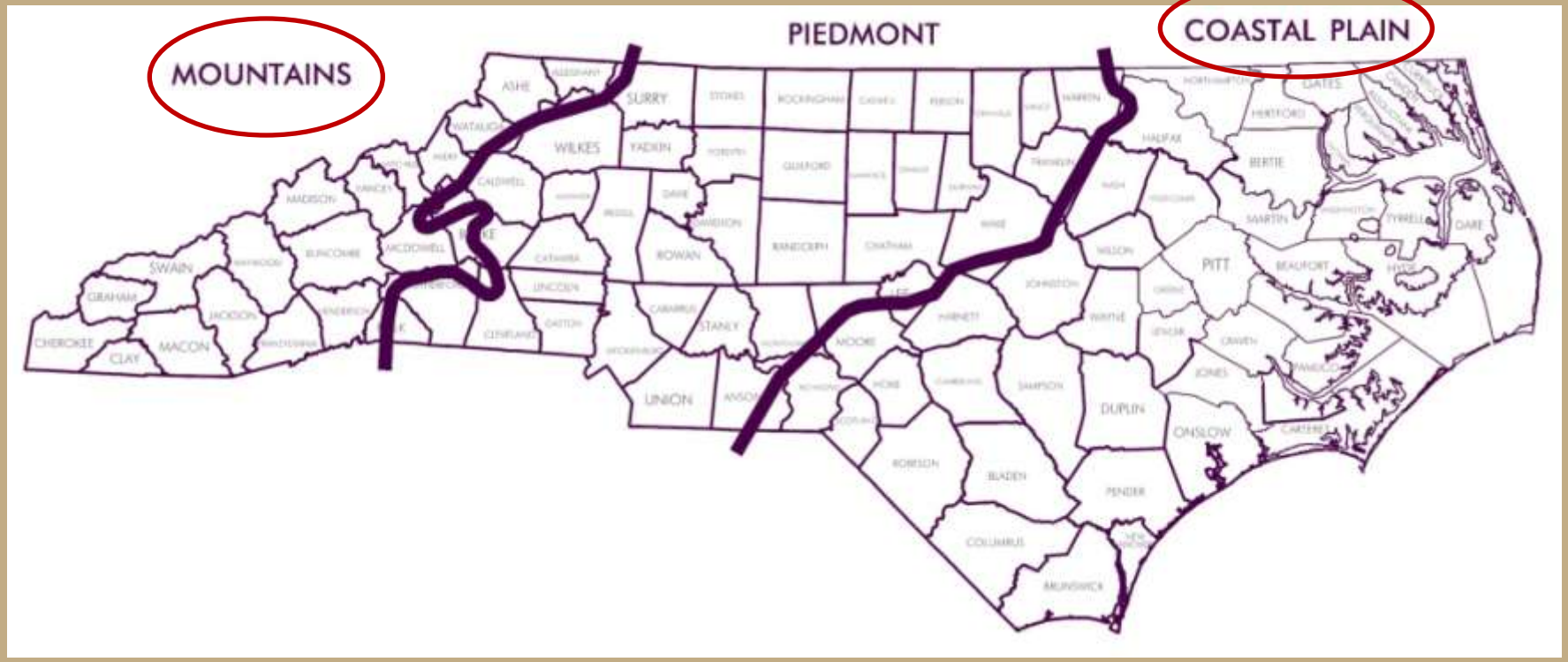
US 19 Wattle Cost Comparison

	Engineer Estimate	Contractor Bid Price
• Silt Check A	$378	$323
• Silt Check B	$85	$71
• Wattle with PAM	$28	$81

Infiltration Basin

- Utilized in mountains and coastal plain
- Basin must drain in three days or less
- Cost $1000 less than skimmer basin

Infiltration Basin Implementation



Earthen Dam with Skimmer

- Utilized throughout state
- Need large cross section and ditch grade of two percent or less
- Easier to install and remove than sediment basin
- Cheaper to construct than traditional basin

Turnpike Design Build

Innovative Basin Design

- Design Build allows basins to be designed to remain throughout life of project
- 3D modeling used to conceptually design tiered skimmer basin

Innovative Basin Design

- Design Build allowed design and construction of measures outside footprint of roadway
- Located where jurisdictional features could be protected
- Non perforated risers used to manage large drainage areas and regulate release of turbid water

Design Build Permitting Process

- Process allowed contractors to get involved in the permitting process
- Agency and contractor interaction allowed for a single work bridge
- Process normally determined by permitted area
- Saved time and money

Creative Ideas

- Grout used around matting and pipe connections on skimmer basins
- Discovered issues with earth material used to construct berms becoming saturated and sloughing

Onsite Staging Areas

- Asphalt plant and waste site inside corridor
- Triassic rock crushed on site for fill material
  - Reduced amount of dirt hauling to site

Clean Water Diversions

- Routed oncoming water away from basins
- Allowed for smaller sediment basins
- Design Build allowed adjustments in timely manner

Seeding and Mulching

- 100 acres permanent
- 1000 acres temporary
- Phase seeding allowed for rapid movement of soil

Western Wake Expressway Toys for Tots

- Raised $700 cash and “loader” full of toys for program

Project Profiles

US 311 Guilford/Randolph Co.

US 311 Guilford/Randolph Co.

- One of the first projects with skimmer technology
- Randleman Buffer Rules
- Good Stage Seeding

I-85, Yadkin River Bridge Rowan Co.

- Top down construction over wetland

I-85, Yadkin River Bridge Rowan Co.

- Regularly scheduled day of each week for seed contractor
- Temporary & permanent

REU Overrun Strategies

- Reviewing Biannual HiCAMS Overrun Reports for all erosion control line items by division
- Adjusting quantity estimates based on biannual reports
- Quantity snapshot of overruns for current project corridors with multiple sections
- Alternative methods in the field to avoid quantity overrun

Overrun Review – Final Estimates Paid

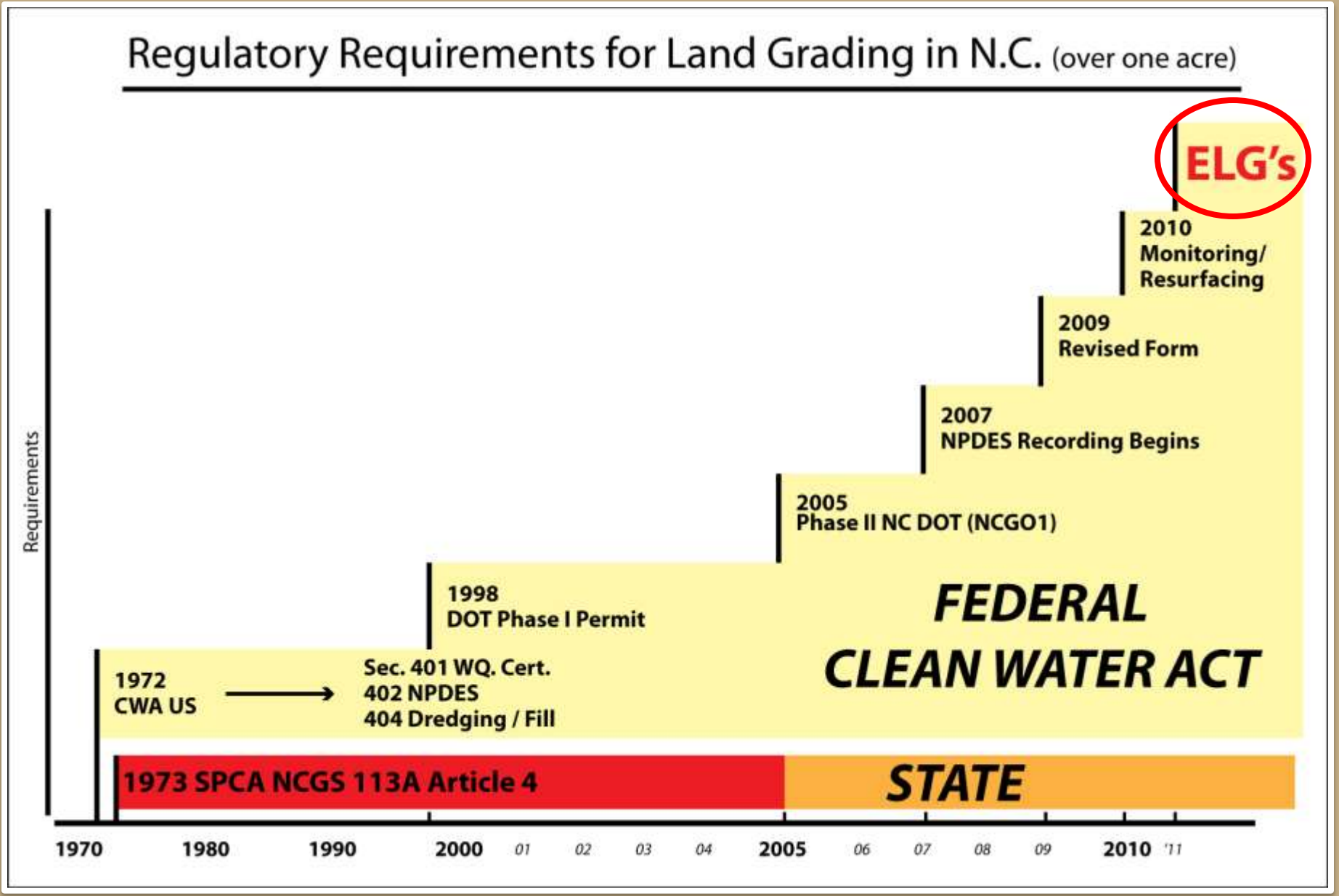
Year	Average % Overrun of Erosion Control Line Items (10 or more Occurrences of 100% or more)
2007	740%
2008	520%
2009	509%
2010	400%

Year	No. of Erosion Control Line Items with Overruns 100% or more with 10 or more Occurrences
2007	243
2008	260
2009	222
2010	173

Average Percent Overrun*

EC Line Item	2007	2008	2009	2010
Matting for Erosion Control	1808	590	525	495
Silt Fence	289	285	328	261
Temporary Slope Drains	288	371	335	305
Seeding & Mulching	262	180	201	159
Seed for Repair Seeding	263	431	443	399
Fertilizer for Repair Seeding	315	443	441	390
Mowing	2840	328	557	-
Specialized Hand Mowing	855	2523	2092	-

* - 10 or more occurrences of 100% Overrun or more for Final Estimates Paid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Monitoring/
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2009
Revised Form
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NPDES Recording Begins
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Phase II NC DOT (NCGO1)
1998
DOT Phase I Permit
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1973 SPCA NCGS 113A Article 4
STATE
Requirements
1970
1980
1990
2000
01
02
03
04
2005
06
07
08
09
2010
'11

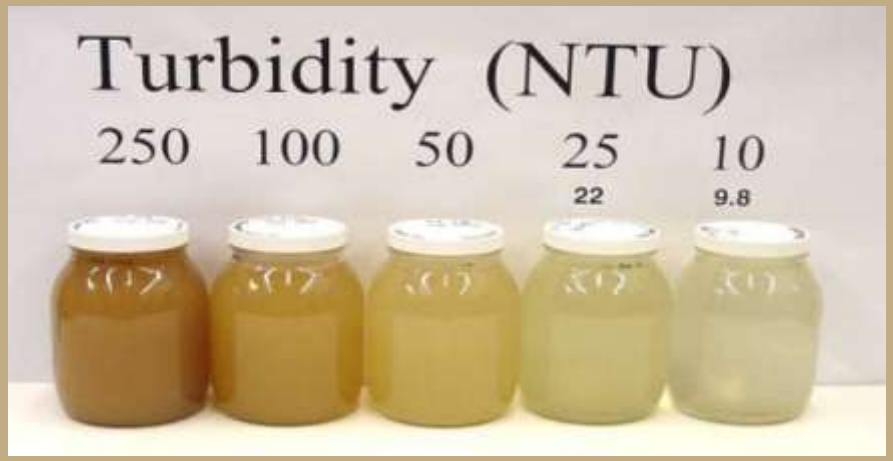
What are Effluent Limitation Guidelines?

- Technology-based standards for control of wastewater and stormwater discharges from various categories of industry
- Proposed revisions to NPDES Construction Stormwater Permit NCG01

Data Source: EPA

Construction ELG's – Two Parts

1. Numeric Limits – Turbidity runoff limit applicable to larger projects (20 ac/10 ac)
   - All discharges must be monitored
   - Daily average of 280 NTU's



Construction ELG's – Two Parts

2. Non-Numeric requirements (BMP's) applicable to all sites one acre or greater
   - 14 day ground cover requirements
   - Surface dewatering from basins (skimmers)

Data Source: EPA

Can You Ignore??

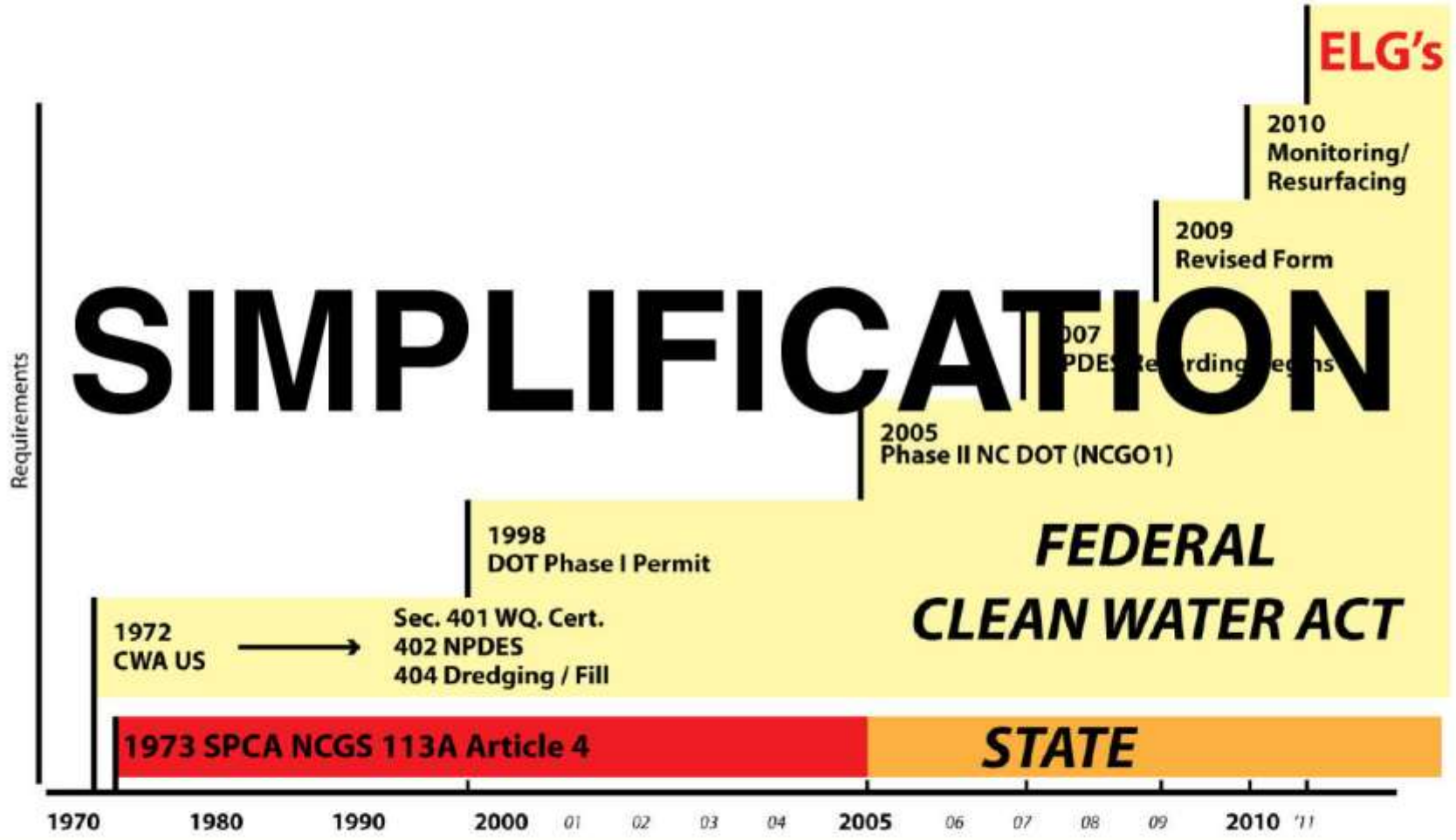
- Activity could be out of compliance with NPDES permit
- State or Federal Enforcement

Data Source: EPA

When will ELG's happen?

- Draft available for review early March
- Revisions must be complete by August 2, 2011

Data Source: EPA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1990
2000
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